

N° 17,404



A.D. 1912

(Under International Convention.)

Date claimed for Patent under Patents and Designs Act, 1907, being date of first Foreign Application (in the United States), } 27th July, 1911.

Date of Application (in the United Kingdom), 26th July, 1912

At the expiration of twelve months from the date of the first Foreign Application, the provision of Section 91 (3) (a) of the Patents and Designs Act, 1907, as to inspection of Specification, became operative

Accepted, 13th Feb., 1913

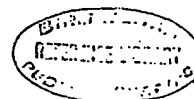
# COMPLETE SPECIFICATION.

## Improvements in the Construction and Conning Equipment for Submersible Boats.

We, LAWRENCE YORK SPEAR and HUGO EUGENE GRIESHABER, both of New London, County of New London, State of Connecticut, United States of America, Naval Engineers, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention relates to the construction and arrangement of the upper midship section on the navigating equipment of a submersible vessel, such as a submersible torpedo boat. In a companion application filed of even date herewith, we have disclosed a submarine vessel having at the midship section an upstanding housing having a flat top of considerable extent which serves as a navigating bridge, the housing being so shaped as to constitute a fairwater, and enclosing an observation tower, periscope tubes and ventilators, as well as a hatch trunk extending from the main hatch to the bridge. The submersible boat disclosed in that application had a navigating station on the bridge for use when the vessel is running on the surface, and a second navigating station, equipped with a navigator's periscope, within the hull of the vessel, and an observation tower serving primarily as a trimming station. The present application relates to a submersible vessel having substantially the same upstanding housing and elevated navigating bridge, but it has a conning tower large enough to accommodate two or more men, and constituting a navigating station when submerged. This conning tower is equipped with a navigator's periscope, speaking tubes, and other adjuncts necessary for the navigation of the vessel, including a steering station, and engine room telegraph and torpedo firing devices if desired. The invention further contemplates improvements in structural details, which will be fully understood from a consideration of the following description of a preferred embodiment of the invention.

[Price 8d.]



*Improvements in the Construction and Conning Equipment for Submersible Boats.*

In the drawings:

Figure 1 is a vertical central longitudinal section of the upper midship portion of the boat.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a section on the line 3—3 of Figure 1; and

Figure 4 is a plan view of the parts shown in Figures 1 and 2.

As is customary in vessels of this type, the vessel shown has a strong hull A constructed to withstand the pressure of deep submergence, which has a super-structure B running the length thereof with a flat top constituting the main deck of the vessel. Built into the strong hull and constituting an upward projection therefrom, and itself so constructed as to withstand the pressure of deep submergence, is the conning tower C, which constitutes a navigating station when submerged, and may be equipped with torpedo firing devices, and is of sufficient capacity to accommodate at least two men. This conning tower has at the base a contracted opening into the interior of the vessel, which opening is provided with a water-excluding closure *c*, whereby it may, if desired, be shut off from the interior of the vessel. Rising from the top of the conning tower, at one end thereof, is an observation hood *d* containing observation port-holes, through which one of the officers in the conning tower may make observations. This hood is particularly useful in the operation of trimming the vessel. The hood also constitutes a cover for the conning tower hatch, and for that purpose is provided with a hinge connection to the top of the tower, and with mechanism for locking it in the closed water excluding position, as shown in Figure 1. Directly beneath the hood are arranged two platforms *e*, *e'* at different levels, these platforms being hinged to the side of the tower so that they may be thrown up or down. The upper one, *e*, serves for the officer to stand on when he is using the observation hood, and the other, *e'*, when he is assisting as second officer in the navigation of the vessel submerged. At the other end of the tower is arranged the navigator's periscope D, and beneath it a platform *h* upon which the navigating officer using the periscope stands. The tower is also preferably provided with observation port-holes *h'* at a convenient level for use by an officer standing on either the platform *h* or the platform *e'*, but it is equipped with navigating adjuncts including compass *i*, and speaking tubes *s*, or telephones not shown.

The vessel is provided with an additional periscope E which extends down to a station within the hull, which may be equipped with steering gear, torpedo firing control and other adjuncts as is the case with the conning tower station, either station being available at the option of the commanding officer. This additional periscope is arranged at the extreme after portion of the conning tower, preferably outside of the strong wall thereof, as shown in Figure 1, and between the two periscopes E and D is arranged a ventilator F, having at the top a hinged flat cover *f*, to the underside of which is fastened an operating cord as shown, and also having, at the bottom, the emergency closure *f'*, which serves an additional security against the admission of the water of the sea, in case the upper portion of the ventilator is punctured or otherwise caused to leak. In the preferred construction the two periscopes, with their surrounding housings, and the ventilator, are built into a single enclosing structure tapered at its ends to constitute a fairwater.

The conning tower, in the preferred construction is surrounded by an upstanding housing G, of considerable extent, shaped to constitute a fairwater, and of which the flat top forms a navigating bridge. This housing is open to the sea, and is self-bailing and self-filling, and it is partitioned off just aft of the conning tower to constitute a hatch trunk H extending from the main hatch to the bridge, said trunk having a hinged cover *m* at the top, and the hatch having a cover *n* equipped with mechanism for locking it in a closed position. This arrangement of fairwater and hatch trunk is, however, disclosed and claimed in our co-pending application referred to, and constitutes no part

*Improvements in the Construction and Conning Equipment for Submersible Boats.*

of the present invention. On the said bridge is installed a standard O carrying an electrical controller for steering mechanism, and preferably also an engine room telegraph, so that the vessel may be navigated from this bridge. Within the housing are also included the forward and aft ventilators N and M, and these ventilators should be equipped with water-excluding valves as is the ventilator F.

It will be understood from the foregoing description that when the vessel is running on the surface it may be navigated from the elevated navigating bridge; when it is to be submerged, the observation hood Z may be used during the trimming operation; and after submergence the vessel is navigated either from within the conning tower, or from the station in the hull.

In either case one periscope is available for lookout or supplementary purposes in preferred form of the invention and the after periscope is made the higher of the two, so that, if the commanding officer desires to take station in the body of the boat instead of in the conning tower, he may do so as a view directly ahead is obtained with both periscopes and either one may be used for steering on a range when submerged or for laying the boat upon a target.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. An arrangement of navigating equipment for submarine boats in which the parts projecting from the deck are enclosed in a common housing open to the sea and tapered at its forward and after ends, the deck of which forms the platform of the boat, characterised by the fact that in the said housing there is provided a conning tower, said conning tower having stations for two men at once when the boat is not submerged, said conning tower having a periscope, an observation hood, a platform below the periscope, and two further platforms one above the other and placed both below the observation hood so that from the upper platform an observer standing on it can make observations through the observation hood.

2. An arrangement according to Claim 1, characterised by the fact that the conning tower has two periscopes placed externally to the said tower, enclosed in a common housing, one of the periscopes leading into the interior of the boat.

3. An arrangement according to Claims 1 and 2, characterised by the fact that the periscope leading into the interior of the boat, the periscope for the conning tower and the casing enclosing and combined with said periscope tubes form a single projecting structure above the conning tower.

4. An arrangement according to Claims 1 to 3 characterised by the fact that the two periscopes and one of the ventilators and the casing enclosing and combined with the periscopes form a single projecting structure above the conning tower.

Dated this 26th day of July, 1912.

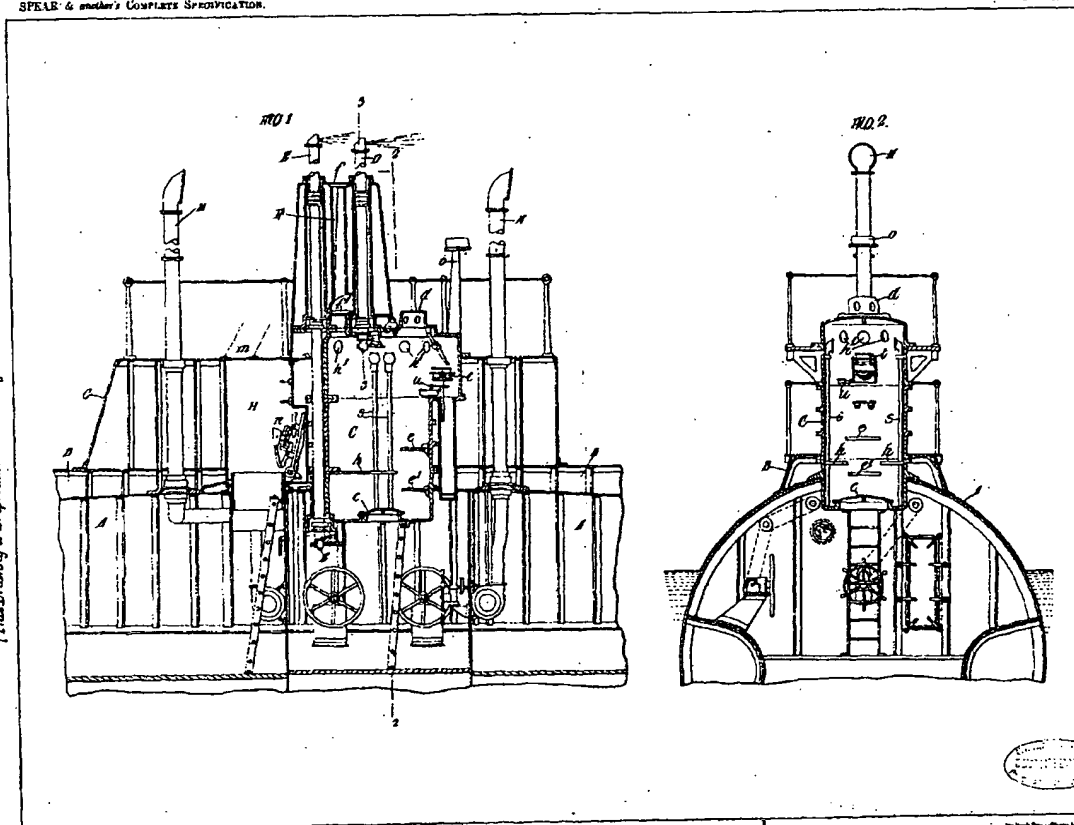
HASELTINE, LAKE & Co.,  
7 & 8, Southampton Buildings, London, England, and  
60, Wall Street, New York City, U.S.A.,  
Agents for the Applicants.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1913.

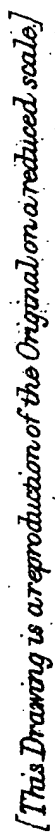
A.D. 1912 JULY 26. No. 17,401.  
 SPEAR & another's COMPLETE SPECIFICATION.

(12 SHEETS)  
 SHEET 1.

[This Drawing is a reproduction of the Original on a reduced scale]

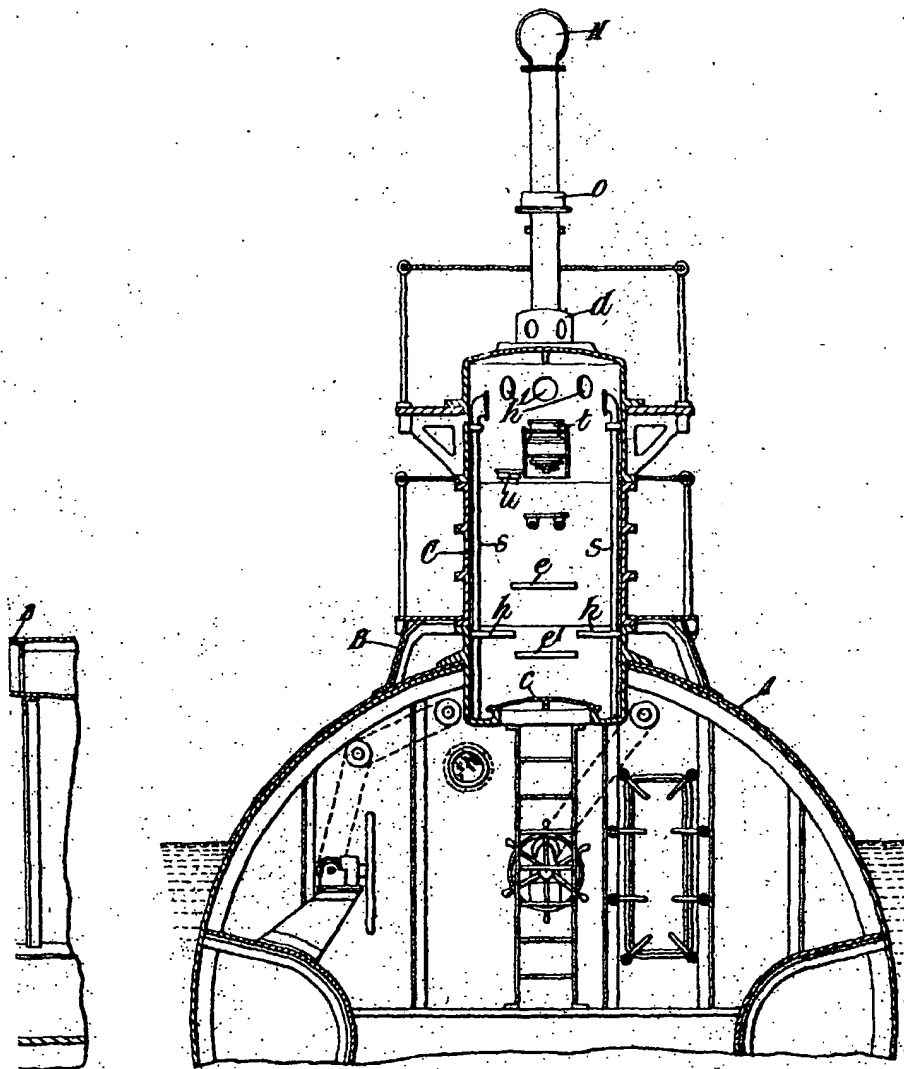


## SPEAR & *another's* COMPLETE SPECIFICATION.



(2 SHEETS)  
SHEET 1. -

**NO. 2.**



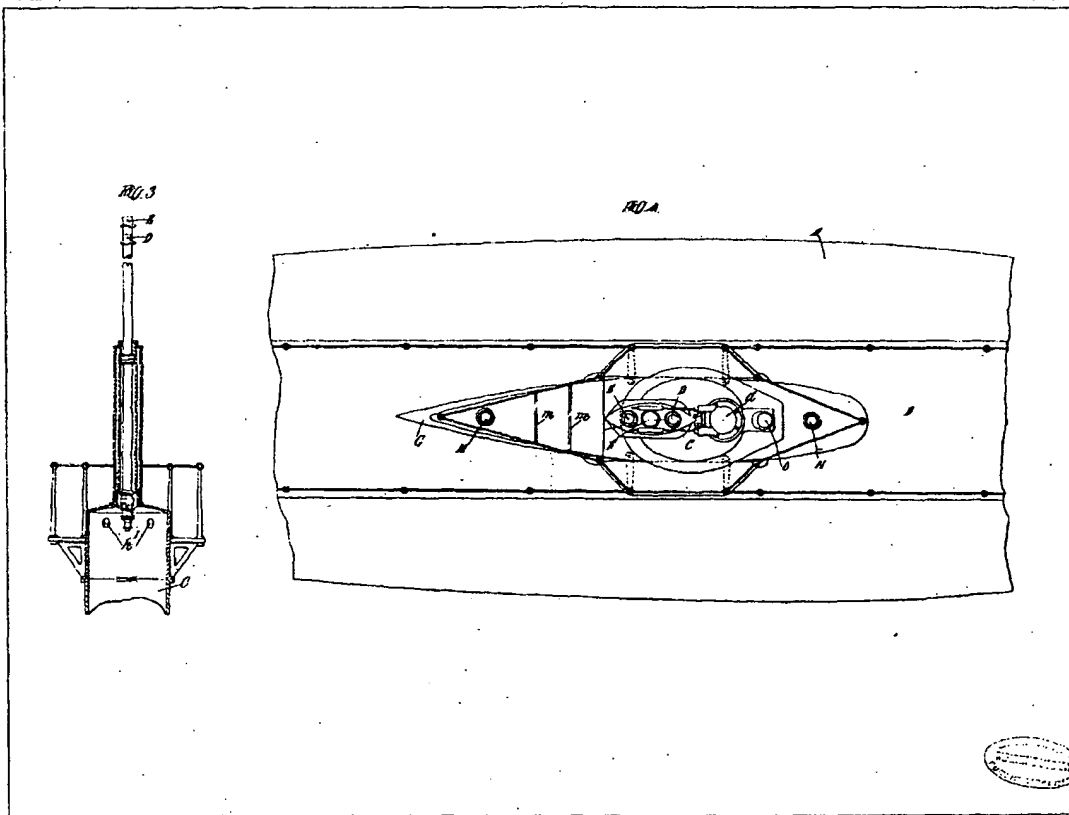
SECRET

M&J by A. Sosa, Photo-Liaison

A.D. 1912, JULY 26, N<sup>o</sup> 17,464.  
SPEAR, & another's COMPLETE SPECIFICATION.

(19 SHEETS)  
SHEET 3

[This Drawing is a reproduction of the Original on a reduced scale]



W. & A. G. Smith, Patent Agents

[This Drawing is a reproduction of the Original on a reduced scale.]

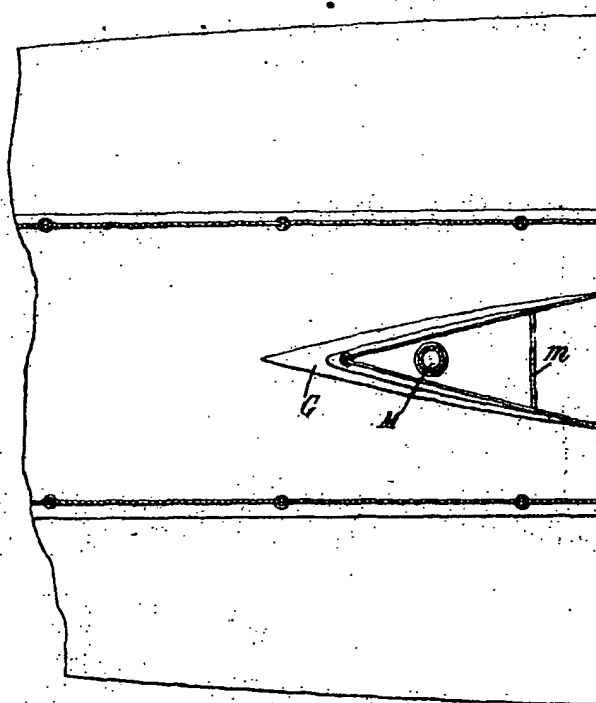
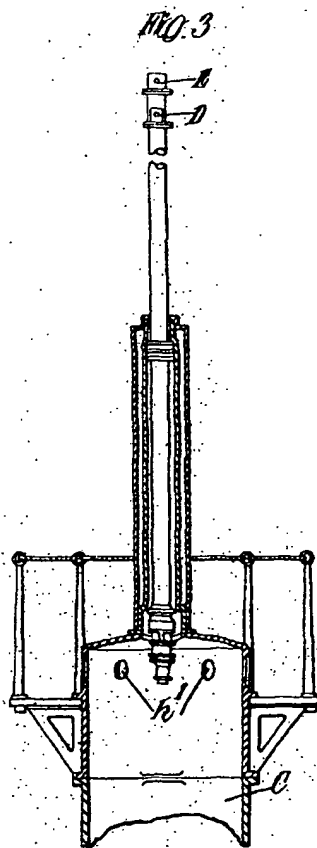
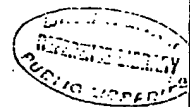
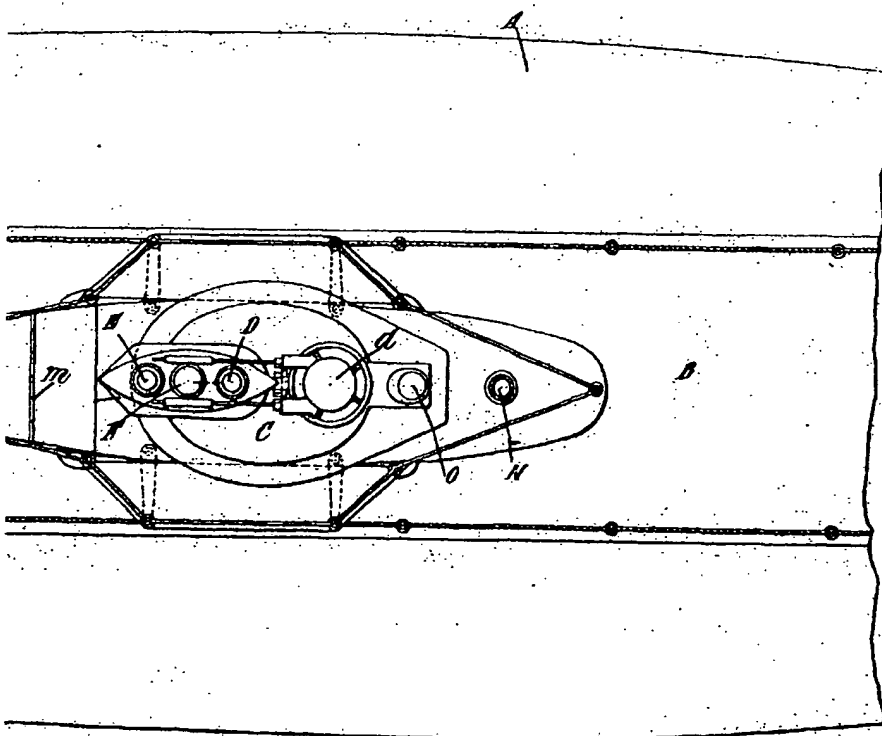




FIG. A.



Made by d. Soria, Photo-Litho.

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☒ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**